2nd International Conference on Volcanic Ash and Aviation Safety

Hilton Alexandria Mark Center Hotel
5000 Seminary Road
Alexandria, VA 22311
June 21-24, 2004

Avoiding Airborne Volcanic Ash – Anywhere in the World

What's at risk from the 550 historically active volcanoes worldwide?

Thousands of airline flights--*more than 80 commercial aircraft unexpectedly encountered volcanic ash in flight and at airports*
Safety--*hundreds of thousands of passengers*
Billions in airline resources annually--*costs of up to $80 million in repairs to a single aircraft*

AGENDA

Sunday 20 June 2004

5:00 PM Early Registration (5:00-8:00)

Monday 21 June 2004

7:00 AM Registration open

Continental Breakfast

Opening Session

8:30 AM Conference Welcome and Introduction of the Mayor of Alexandria, VA

- Mr. Samuel P. Williamson, Federal Coordinator for Meteorological Services and Supporting Research

8:35 AM Welcome

- Mayor William "Bill" Euille, Alexandria, VA

8:45 AM Conference Objectives and Introductions

- Mr. Samuel P. Williamson, Federal Coordinator for Meteorological Services and Supporting Research

9:00 AM Keynote Address/Invited Speakers

- The Honorable Ted Stevens, United States Senate (invited)
- Dr. James R. Mahoney, Assistant Secretary of Commerce for Oceans and Atmosphere and NOAA Deputy Administrator
- Dr. Charles G. Groat, Director, U.S. Geological Survey
- RADM. James P. Schear, Vice President for Safety, Federal Aviation Administration

10:30 AM Morning Coffee Break (10:30 – 11:00)

- Mr. Ronald J. Birk, Director of the Earth Science Applications Division, Office of Earth Science, NASA
- Mr. Gianni Semenzato, Senior Flight Inspector, Ente Nazional per L'Aviazione Civile (Italian Civil Aviation Authority)

12:00 PM Luncheon (Sponsored by Air Line Pilots Association)

- Guest Speaker: Captain Eric Moody, British Airways (Ret.), *Gliding a B747 Out of Volcanic Ash.*

1:30 PM **Panel 1 – Airborne Volcanic Ash: Perspectives, Challenges, and Opportunities**

Panel Moderator: Dr. Elbert W. (Joe) Friday, WeatherNews Professor of Meteorology and Founding Director of the Sasaki Applied Meteorology Research Institute, University of Oklahoma

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Panelists:

- Dr. Thomas P. Miller, Scientist Emeritus, USGS Alaska Volcano Observatory
- Dr. Louis W. Uccellini, Director, NOAA's NWS National Centers for Environmental Prediction
- Ms. Gloria Kulesa, Manager, Aviation Weather Research, FAA
- Mr. Alan Shaffer, Director, Plans and Programs, Office of the Secretary of Defense
- Mr. Peter Chen, Director, Operations Branch, Canadian Meteorological Center, Environment Canada

3:00 PM Afternoon coffee break (3:00-3:30)

3:30 PM **Panel 2: Education, Training, and Outreach**

Panel Moderator: Dr. Gregory S. Forbes, Severe Weather Expert, The Weather Channel

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Panelists:

- Ms. Cyndie Abelman, Meteorologist-In-Charge, National Oceanic and Atmospheric Administration/National Weather Service, Oklahoma City, OK

- Captain Albert M. Beerley, US Airways Airbus, US Airways/ALPA Training Committee
- Mr. John O'Brien, Director, Engineering and Air Safety Department, Air Line Pilots Association
- Mr. Saburo Onodera, Manager, Flight Crew Training Department, Japan Airlines
- Professor Eric Doten, Director of Center for Aerospace Safety/Security Education, Embry-Riddle Aeronautical University

5:00 PM **Administrative Remarks**
Erin McNamara, Conference Coordinator for Logistics

Exhibits open
Posters displayed

OFCM Staff Meeting

5:30 PM Icebreaker (Sponsored by Tenix Corporation)

Tuesday 22 June 2004

7:00 AM **Continental Breakfast**

7:55 AM **Administrative Remarks**
Erin McNamara, Conference Coordinator for Logistics

8:00 AM **Session 1: Encounters, Damage, and Socioeconomic Consequences**
Session Chairs: Mr. Edward Miller, Air Line Pilots Association (ALPA)
Mr. Leonard Salinas, United Airlines (UAL)

8:00 AM 1.1 *2003 Caribbean Volcanic Ash Encounters*
Captain Albert M. Beerley, US Airways ALPA Training Committee, Philadelphia, PA, USA

8:20 AM 1.2 *Engine Damage to a NASA DC-8-72 Airplane from a High-Altitude Encounter with a Diffuse Volcanic Ash Cloud*
Thomas J. Grindle, NASA, Edwards, CA, USA; and Frank W. Burcham, Jr.

8:40 AM 1.3 *Aircraft Encounters from the 18th August 2000 Eruption at Miyakejima, Japan*
Andrew Tupper, Bureau of Meteorology, Darwin, Australia; and Yasuhiro Kamada, Noriyuki Todo, Ed Miller

9:00 AM 1.4 *Impacts of Volcanic Ash on Airline Operations*
Leonard J. Salinas, United Airlines Flight Dispatch, Chicago, Illinois, USA; and Daniel Watt

9:20 AM 1.5 *Air Niugini and the Volcanic Ash Threat*
Captain David Innes, Flight Safety Office, Air Nuigini, Papua, New Guinea

9:35 AM 1.6 *Reducing Encounters of Aircraft with Volcanic Ash Clouds*
Marianne Guffanti, USGS, Reston, VA, USA; and Thomas J. Casadevall, Gari Mayberry

9:45 AM *Poster Preview by Session Chair*

Exhibits open (8:00-5:00)
Posters displayed

10:00 AM Morning coffee break (10:00-10:30)

Exhibits staffed (10:00-3:30)

10:30 AM **Session 2: The Volcanic Source - Eruption Monitoring and Reporting**
Session Chairs: Ms. Marianne Guffanti, U.S. Department of the Interior/U. S. Geological Survey (DOI/USGS)
Dr. Steven McNutt, Geophysical Institute, University of Alaska and the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)

10:30 AM 2.1 *A Global Perspective on Volcanoes and Eruptions*
Richard Wunderman, Smithsonian Institution, Washington, DC, USA; and Lee Siebert, James Luhr, Tom Simkin, Ed Venzke

10:45 AM 2.2 *Promise and Pitfalls in Eruption Forecasting*
Chris Newhall, USGS, Seattle, WA, USA

11:00 AM 2.3 *Status of Volcano Monitoring Worldwide*
John W. Ewert, USGS, VDAP, Vancouver, WA, USA; and Christopher G. Newhall

11:10 AM 2.4 *Volcanic Alert Systems: An Overview of their Form and Function*
Bradley Scott, Institute of Geological and Nuclear Sciences, Wairakei, New Zealand

11:25 AM 2.5 *Recent Etna's Explosive Eruptions Threaten Seriously Aviation in Central Mediterranean Region*
Mauro Coltelli, INGV, Catania, Italy

11:40 AM 2.6 *Recent Eruptive Activity in Ecuadorian Volcanoes and its Threat to Aviation Safety*
Hugo Yepes A., Instituto Geofisico, Escuela Politecnica Nacional, Quito-ECUADOR

11:55 AM 2.7 *The Alaska Volcano Observatory – Fifteen Years of Working to Mitigate the Risk to Aviation from Volcanic Ash in the North Pacific*
Thomas L. Murray, USGS, AVO, Anchorage, AK, USA

12:05 PM 2.8 *Ground-Based Real Time Monitoring of Eruption Clouds in the Western Pacific*
Kisei Kinoshita, Kagoshima University, Kagoshima, Japan; and Satoshi Tsuchida, Chikara Kanagaki, Andrew C. Tupper, Ernesto G. Corpuz, Eduardo P. Laguerta

12:20 PM *Poster Preview by Session Chair*

12:30 PM Lunch (12:30-1:30; catered)

1:30 PM **Session 3: Ash Cloud Observations, Modeling, and Forecasting**
Session Chairs: Dr. William Rose, Michigan Technological University (MTU)
Ms. Barbara Stunder, U.S. Department of Commerce/National Oceanic and Atmospheric Administration/Office of Oceanic and Atmospheric Research/Air Resources Laboratory (DOC/NOAA/OAR/ARL)
Mr. Andrew Tupper, Bureau of Meteorology, Volcanic Ash Advisory Center (VAAC), Australia

1:30 PM 3.1 *Modeling Volcanic Ash Transport and Dispersion: Expectations and Reality*
Rene Servranckx, CMC, MSC, Quebec, Canada; and Peter Chen

1:46 PM 3.2 *Discrepancies Between Satellite Detection and Forecast Model Results of Ash Cloud Transport: Case Study of the 2001 Eruption of Mt. Cleveland Volcano, Alaska*
David J. Schneider, USGS, AVO, Anchorage, AK, USA; Rene Servranckx, Jeff Osiensky

2:00 PM 3.3 *Assessing Volcanic Ash Hazard by Using the CALPUFF System*
Sara Barsotti, Istituto Nazionale di Geofisica e Volcanologia, Pisa, Italy; and Augusto Neri, Joe Scire

2:12 PM 3.4 *Potential of the ATHAM Model for Use in Air Traffic Safety*
Christiane Textor, Lab. Sciences du Climate et de L'Environnement, Paris, France; and Gerald Ernst

2:24 PM 3.5 *Volcanic Ash and Aerosol Detection Versus Dust Detection Using GOES and MODIS Imagery*
Bernadette Connell, CIRA/CSU, Fort Collins, CO, USA

2:36 PM 3.6 *Ice in Volcanic Clouds: Where and When?*
William I. Rose, Michigan Technological University, Houghton, MI, USA

2:48 PM 3.7 *Detection of Upper Level SO_2 via the GOES Sounder*
Fred Prata, CSIRO Atmospheric Research, Aspendale, Australia; and Anthony J. Schreiner, Gary P. Ellrod, Timothy J. Schmit

3:00 PM 3.8 *The G-bIRD Volcanic Ash Cloud Detection System*
Bill Young, Tenix, Sydney, Australia; and Matthew Simmons

3:12 PM *Poster Preview by Session Chair*

3:15 PM Afternoon coffee break (3:15-3:45)

3:45 PM **Session 4: VAAC Operations and Capabilities**

Session Chairs: Ms. Grace Swanson, U.S. Department of Commerce/National Oceanic and Atmospheric Administration/National Environmental Satellite, Data, and Information Service/Volcanic Ash Advisory Center, Washington, D.C., USA (DOC/NOAA/NESDIS/VAAC)

Mr. Rene Servranckx, Environment Canada, Canadian Meteorological Center, Volcanic Ash Advisory Center, Montreal (EC/CMC/VAAC)

3:45 PM 4.1 *The International Airways Volcano Watch (IAVW)*
Raul Romero, ICAO, Montreal, Canada

3:55 PM 4.2 *WMO Activities Related to Volcanic Ash*
Saad Benarafa, World Meteorological Organization, Geneva, Switzerland

4:00 PM 4.3 *NOAA's NWS Volcanic Ash Program: Current Status and Plans for the Future*
Christopher S. Strager, NWS Alaska Region Headquarters, Anchorage, AK, USA; and Jeffrey M. Osiensky, Gary L. Hufford

4:10 PM 4.4 *Volcanic Ash Impact on International Airport of Mexico City (AICM), Due to Emissions of Popocatepetl Volcano*
Humberto Rodriguez, DMTA of SENEAM, Mexico, D.F. Mexico

4:20 PM 4.5 *The Darwin VAAC Volcanic Ash Workstation*
Rodney Potts, Bureau of Meteorology Research Centre, Melbourne, Australia; and Mey Manickam, Andrew Tupper, Jason Davey

4:30 PM 4.6 *Shared Situational Awareness and Collaboration Through the Use of the Volcanic Ash Collaboration Tool (VACT)*

		Jeffrey M. Osiensky, NWS Alaska Aviation Weather Unit, Anchorage, AK, USA; and Greg Pratt, David J. Schneider, Lynn Sherretz
4:40 PM	4.7	*Perspectives on Operational Volcanic Ash Warnings* Hordur Thordarson, Meteorological Service of New Zealand, Wellington, New Zealand
4:50 PM	4.8	*Volcanic Cloud Conceptual Models for Volcanic Ash Advisory Centre Operations* Andrew Tupper, Bureau of Meteorology, Darwin, Australia; and Gerald Ernst, Christiane Textor, Kisei Kinoshita, J. Scott Oswalt, Daniel Rosenfeld
5:00 PM	4.9	*Volcanic Ash Advisory Support for the U.S. Department of Defense* Charles Holliday, U.S. AFWA, Offutt AFB, Nebraska, USA
5:05 PM	4.10	*Web Access to the Digital Archive of VAA Messages and VAFTAD Model Output* Paula Dunbar, NOAA/NESDIS/NGDC, Boulder, CO, USA; and Grace Swanson
5:10 PM		*Poster Preview by Session Chair*

5:30 PM Sessions end for the day

OFCM Staff Meeting

7:00 PM Tour Washington VAAC

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Wednesday 23 June 2004

7:00 AM **Continental Breakfast**

7:55 AM **Administrative Remarks**
Erin McNamara, Conference Coordinator for Logistics

8:00 AM **Session 5: Aviation Industry Perspectives**
Session Chairs: Mr. Steven R. Albersheim, U.S. Department of Transportation/Federal Aviation Administration (DOT/FAA)
Mr. John Murray, National Aeronautics and Space Administration/Langley Research Center (NASA/LaRC)

8:00 AM 5.1 *Technology Transfer: Moving R&D to Operations*
Steven R. Albersheim, Federal Aviation Administration, Washington, D.C., USA

8:15 AM 5.2 *The Effect of Volcanic Activity on Airports*
Marianne Guffanti, USGS, Reston, VA, USA; and Gari Mayberry, Rick Wunderman, Thomas J. Casadevall

8:30 AM 5.3 *An Air Traffic Controller Perspective on Volcanic Ash: How to Deal with It!*
Richard Hernandez, FAA San Juan Automated International Flight Service Station, San Juan, Puerto Rico, USA

8:50 AM 5.4 *The New Zealand Volcanic Ash Advisory System*
Peter Lechner, Civil Aviation Authority of New Zealand, Wellington, NZ

9:05 AM 5.5 *Prevention of Volcanic Ash Encounters in the Proximity Area Between Active Volcanoes and Heavy Air Traffic Routes*
Saburo Onodera, Flight Crew Training Department, Japan Airlines, Tokyo, Japan

9:20 AM 5.6 *A Program for Research and Systems Integration to Help Mitigate the Volcanic Ash Hazard to Aviation*
Tenny A. Lindholm, National Center for Atmospheric Research (NCAR), Boulder, CO, USA

9:35 AM 5.7 *Explosive Volcanic Eruptions Across the Heavily Traveled North Pacific Air Routes: Frequency, Duration, and Impact on Aviation*
Thomas P. Miller, USGS, AVO, Anchorage, AK, USA

9:55 AM *Poster Preview by Session Chair*

Exhibits open (8:00-5:00)
Posters displayed

10:00 AM Morning coffee break (10:00-10:30)

Exhibits staffed (10:00-3:30)

10:30 AM Breakout Sessions (10:30-12:30)

Breakout Session 1: Improving Volcanic Ash Cloud Detection

Session Moderators: Dr. David J. Schneider, U.S. Geological Survey, Alaska Volcano Observatory (USGS/AVO)

Dr. Steven Ackerman, Cooperative Institute for Meteorological and Satellite Services, University of Wisconsin - Madison

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Breakout Session 2: Improving Modeling Capabilities

Session Moderators: Mr. Rene Servranckx, Environment Canada, Canadian Meteorological Center, Volcanic Ash Advisory Center, Montreal (EC/CMC/VAAC)

Ms. Barbara Stunder, U.S. Department of Commerce/National Oceanic and Atmospheric Administration/Office of Oceanic and Atmospheric Research/Air Resources Laboratory (DOC/NOAA/OAR/ARL)

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Breakout Session 3: Understanding the Socioeconomic Consequences

Session Moderators: Mr. Floyd Hauth, Science and Technology Corporation

Mr. Peter Lechner, Civil Aviation Authority of New Zealand

Click here for more information

12:30 PM Lunch (12:30-1:30; catered)

1:30 PM Poster Session (1:30-3:30)

P1.1 *Three Aircraft Encounters over Micronesia*
Andrew Tupper, Bureau of Meteorology, Darwin, Australia; and Jason Davey, Paul Stewart, Barbara Stunder, Rene Servranckx

P1.2 *Sulfurous Odors: A Signal of Entry into an Ash Plume – But Perhaps Less Reliable for Escape*
Richard Wunderman, Smithsonian Institution, Washington, DC, USA

P2.1 *Evaluation of a Prototype Infrasound System for Enhancing Volcanic Ash Warnings*
Henry Bass, University of Mississippi; and Milton Garces, David McCormack, Peter Chen, Michel Jean

P2.2 *Recurrence of Explosive Eruptions at Etna Volcano that Produce Hazard for Aviation*
Paola Del Carlo, INGV, Catania, Italy

P2.3 *A Proposed Alert-level Notification Scheme for Aviation and Ground-based Hazards at U.S. Volcanoes*
C.A. Gardner, USGS, Cascades Volcano Observatory, Vancouver, WA, USA; and M.C. Guffanti, C.C. Heliker, D.P. Hill, J.B. Lowenstern, T.L. Murray

P2.4 *Monitoring and Reporting of Kamchatkan Volcanic Eruptions*
Evgenii Gordeev, Institute of Volcanology and Seismology, Petropavlovsk-Kamchatsky, Russia; and Sergei Senjukov, Olga Girina

P2.5 *Volcano-Related Information Available on the Internet: From Current Activity to the Past 10,000 Years*
Gari Mayberry, USGS, Washington, DC, USA; and Edward Venzke, James Luhr, Richard Wunderman, Lee Siebert, Marianne Guffanti

P2.6 *Volcanic Tremor and its Use in Estimating Eruption Parameters*
Stephen R. McNutt, AVO, Fairbanks, AK, USA

P2.7 *Surprise/Sudden Onset Eruptions: The Case of Reventador Volcano – Ecuador, 03-November, 2002*
Patricia Mothes, Instituto Geofisico, Quito-Ecuador; and Minard L. Hall, Patricia Ramon, Hugo Yepes

P2.8 *Ashfall Scenarios and Aviation Impacts of Future Eruptions of Cotopaxi Volcano – Ecuador*
Patricia Mothes, Instituto Geofisico, Quito-Ecuador; and Minard L. Hall, Pablo Samaniego, Hugo Yepes

P2.9 *Airborne Ash Hazard Mitigation in the North Pacific: A Multi-Agency, International Collaboration*
Christina Neal, USGS, Anchorage, AG, USA; and AVO Staff, Olga Girina, Gail Ferguson, Jeffrey Osiensky

P2.10 *Ground-Based Detection of Volcanic Ash and Suphur Dioxide*
Fred Prata, CSIRO Atmospheric Research, Aspendale, Australia; and Cirilo Bernardo

P2.11 *The New Zealand Volcano Alert Level System – Its Performance in Recent Eruptive Activity*
Bradley Scott, Institute of Geological and Nuclear Sciences, Wairakei, New Zealand

P2.12 *Monitoring of Active Volcanoes of the Kurile Islands: Present and Future*
A.V. Rybin, Institute of Marine Geology and Geophysics, Yuzhno-Sakhalinsk, Russia; and Y.V. Karagusov, P.E. Izbekov, N.S. Terentyev, V.B. Guryanov

P2.13 *Volcanic Eruptions as Thunderstorm Ice Factories*
Earle R. Williams, Parsons Laboratory, MIT, Cambridge, MA, USA; and Stephen R. McNutt

P3.1 *UW-Madison Advanced Satellite Aviation-weather Products MODIS Satellite Volcanic Ash Detection Methodologies*
Steven Ackerman, Wayne F. Feltz, CIMSS/SSEC University of Wisconsin, Madison, WI, USA; and Tim Schmit, John Murray, David Johnson

P3.2 *Removal Processes of Volcanic Ash Particles from the Atmosphere*
Gregg Bluth, Michigan Technological University, Houghton, MI, USA; and Bill Rose, Matt Watson

P3.3 *Sounding of Volcanic Clouds with Balloon-Borne Instruments: Improving Algorithms for Ash and SO_2 in Remote Sensing Imagery*
John Chadwick, Idaho State University, Pocatello, ID, USA; and Zach Lifton, Ken Dean, Jim Chadwick

P3.4 *FALL3D: A Numerical Model for Volcanic Ash Dispersion in the Atmosphere*
A. Costa, Istituto Nazionale de Geofisica e Vulcanologia, Napoli, Italy; and G. Macedonio

P3.5 *Use of Dispersion Models to Track Eruption Clouds*
Ken G. Dean, Geophysical Institute, University of Alaska, Fairbanks, AK, USA; and Rorik A. Peterson, Ken Papp, Jonathan Dehn

P3.6 *Laboratory Measurements of Heterogeneous Ice Nucleation by Volcanic Ash: Importance for Detecting and Modeling Volcanic Clouds*
Adam J. Durant, Michigan Technological University, Houghton, Michigan, USA; and Raymond A. Shaw, Youshi Mi, and William I. Rose

P3.7 *Volcanic Ash Detection and Cloud Top Height Estimation from the GOES-12 Imager: Coping Without a 12μm Infrared Band*
Gary P. Ellrod, NOAA/NESDIS, Camp Springs, MD, USA; and Anthony J. Schreiner, Alonzo M. Brown

P3.8 *Resuspension of Relic Volcanic Ash and Dust from Katmai: Still an Aviation Hazard*
David Hadley, NWS Alaska Aviation Weather Unit, Anchorage, AK, USA; and Gary L. Hufford, James J. Simpson

P3.9 *Observing Popocatepetl's Volcanic Ash Clouds Using MODIS Infrared Data*
M. Alexandra Matiella, Michigan Technological University, Houghton, MI, USA; and Hugo Delgado-Granados, William I. Rose, I. Matthew Watson

P3.10 *Comparison of Ash Detection Techniques Using TOMS, MODIS, AVHRR, and GMS: A Case Study of the August 18 and 28, 2000 Eruption Clouds of Miyakejima, Japan*
Emily McCarthy, Michigan Technological University, Houghton, MI, USA; and Gregg Bluth, Matthew Watson, Andrew Tupper, Yasuhiro Kamada

P3.11 *Predicting Regions Susceptible to High Concentrations of Airborne Volcanic Ash in the North Pacific Region*
Kenneth Papp, Geophysical Institute, University of Alaska, Fairbanks, AK, USA; and Ken Dean, Jonathan Dehn

P3.12 *Reanalysis of Eruption Clouds from the North Pacific Region and Their Impact on Aircraft and Population Centers*
Rorik A. Peterson, Geophysical Institute, University of Alaska, Fairbanks, AK, USA; and Ken G. Dean, Ken Papp, Joanne Groves, Jonathan Dehn

P3.13 *Quantitative Sulphur Dioxide Retrievals from AIRS, MODIS and HIRS*
Fred Prata, CSIRO Atmospheric Research, Aspendale, Australia; and Cirilo Bernardo

P3.14 Sakura – *An Airborne Infrared Imaging Camera for the Detection Of Volcanic Ash and Sulphur Dioxide Gas*
Fred Prata, CSIRO Atmospheric Research, Aspendale, Australia

P3.15 *Testing Real-Time Remote Sensing for Monitoring Volcanic Activity in Central America*
Armando Saballos, INETER, Managua, Nicaragua; and Peter Webley, Martin Wooster

P3.16 *Advances in Ultraviolet Detection of Volcanic Eruption Clouds*
Stephen J. Schaefer, Joint Center for Earth Systems Technology UMBC, Baltimore, MD, USA; and Arlin J. Krueger, Simon A. Carn

P3.17 *Real-Time Monitoring of the Volcanic Ash Fallout Will Improve Airport Safety*
Simona Scollo, INGV, Catania, Italy; and Mauro Coltelli, Marco Folegani, Stefano Natali, Franco Prodi

P3.18 *Operational MODIS Volcanic Ash Products for Aviation Safety and Natural Hazards Mitigation*
George Stephens, OSDPD, NOAA/NESDIS, Camp Springs, MD, USA; and Gary P. Ellrod, Jun-Sun Im

P3.19 *Volcanic Ash Dispersion Modeling Research at NOAA Air Resources Laboratory*
Barbara Stunder, NOAA/ARL, Silver Spring, MD, USA

P3.20 *Operational Volcanic Ash Plume Prediction Model PUFF at the Japan Airlines*
H.L. Tanaka, Institute of Geoscience, University of Tsukuba and FRSGC, Japan; and Saburo Onodera, Daisuke Nohara

P3.21 *Correcting Ash Retrievals for the Presence of Atmospheric Water Vapor Using Foreward Modeling*
I.M. Watson, Michigan Technological University, Houghton, MI, USA; and W.I. Rose, G.J.S. Bluth

P3.22 *Eruption Cloud Echo Measured with C-band Weather Radar*
Yoshihiro Sawada, Hokkaido University, Sapporo, Japan

P4.1 *Operations of Washington Volcanic Ash Advisory Center (VAAC)*
Gregory M. Gallina, NOAA SSD, Camp Springs, MD, USA; and Davida Streett

P4.2 *Improvement of Ash Cloud Information by Tokyo VAAC*
Takeshi Koizumi, Japan Meteorological Agency, Tokyo, Japan; and Yoshihiko Hasegawa, Yasuhiro Kamada, Masamichi Nakamura

P4.3 *The Montreal VAAC Toolbox: When Every Second Counts*
Mark McCrady, CMC, MSC, Quebec, Canada; and Serge Trudel, Jean-Philippe Gauthier, Rene Servranckx

P4.4 *Eruption of Anatahan Volcano: Operations and Observations*
Michael G. Middlebrooke, NOAA/NWS, Barrigada, Guam

P4.5 *The Volcanic Ash Collaboration Tool (VACT)*
Jeffrey M. Osiensky, NWS Alaska Aviation Weather Unit, Anchorage, AK, USA; and Greg Pratt, David J. Schneider, Lynn Sherretz

P4.6 *Volcanic Ash Monitoring and Forecasting at the London VAAC*
Sarah Watkin, Met Office, Exeter, Devon, U.K.; and Derrick Ryall, Helen Watkin, Helen Champion, Stewart Wortley, Nigel Gait

P5.1 *First 8 Hours of Volcanic Eruptions: A Northwest Airlines Example & Recommendation of Revised Flow of Ash Information for Aviation*
Tom Fahey, Northwest Airlines, Minneapolis/St. Paul, MN, USA

3:00 PM Afternoon coffee break (3:00-3:30)

3:30 PM Breakout Sessions (3:30-5:30)

Breakout Session 4: Improving Volcanic Eruption Reporting

Session Moderators: Ms. Christina Neal, U.S. Department of the Interior/U.S. Geological Survey/Alaska Volcano Observatory (DOI/USGS/AVO)

Ms. Cynthia Gardner, U.S. Department of the Interior/U.S. Geological Survey/Cascades Volcano Observatory (DOI/USGS/CVO)

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Breakout Session 5: Technology Transfer from Research into Operations

Session Moderators: Mr. Mark Andrews, Department of Commerce/National Oceanic and Atmospheric Administration/National Weather Service/Aviation Weather Services (DOC/NOAA/NWS/AWS)

Ms. Debi Bacon, U.S. Department of Transportation/Federal Aviation Administration (DOT/FAA)

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Breakout Session 6: Improving VAAC Operational Capabilities

Session Moderators: Mr. Raul Romero, International Civil Aviation Organization, Montreal, Canada (ICAO)

Ms. Grace Swanson, U.S. Department of Commerce/National Oceanic and Atmospheric Administration/National Environmental Satellite, Data, and Information Service/Volcanic Ash Advisory Center, Washington, D.C., USA (DOC/NOAA/NESDIS/VAAC)

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Breakout Session 7: Meeting Aviation Needs

Session Moderators: Mr. William Phaneuf, Air Line Pilots Association (ALPA)

Mr. Richard Heuwinkel, Department of Transportation/Federal Aviation Administration

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5:30 PM Sessions end for the day

OFCM Staff Meeting

6:30 PM Reception at the Smithsonian National Museum of Natural History (6:30 PM – 8:00 PM)

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Thursday 24 June 2004

7:00 AM **Continental Breakfast**

8:00 AM Regional Breakout Sessions (8:00-10:00)

Breakout Session 8: North Asia Pacific (e.g., Alaska, Russia, Japan)
Session Moderators: Mr. Christopher Strager, U.S. Department of Commerce/National Oceanic and Atmospheric Administration (DOC/NOAA)
Ms. Terry Keith, U.S. Department of the Interior/U.S. Geological Survey/Alaska Volcano Observatory (DOI/USGS/AVO)

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Breakout Session 9: The Americas and the Caribbean (excluding Alaska)
Session Moderators: Dr. Patricia Mothes, Instituto Geofísico de la Escuela Politécnica Nacional, Ecuador
J. Armando Saballos, Instituto Nicaraguense de Estudios Territoriales, Nicaragua
Richard Hernandez, Federal Aviation Administration

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Breakout Session 10: Europe, Africa, and the Middle East
Session Moderators: Dr. Gerald Ernst, Department of Geology and Soil Science, University of Ghent, Belgium
Mr. Jean-Philippe Desbios, Volcanic Ash Advisory Center (VAAC), Toulouse, France

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Breakout Session 11: South Asia Pacific (e.g., Indonesia, the Philippines, Australia, New Zealand)
Session Moderators: Mr. Rodney Potts, Australian Bureau of Meteorology Research Centre
Capt. David Innes, Air Niugini

Click here for more information

10:00 AM Morning coffee break (10:00-10:30)

10:30 AM **ICAO's Commitment to Mitigating Volcanic Ash Hazard**
Mr. William Voss, Director, Air Navigation Bureau, International Civil Aviation Organization

10:45 AM **Conference Highlights**
Ms. Marianne Guffanti, DOI/USGS
Mr. Andrew Tupper, Bureau of Meteorology, Volcanic Ash Advisory Center (VAAC), Australia

11:30 AM **Building on Our Successes in Aviation Safety for the Next Decade**
Dr. Elbert W. (Joe) Friday, University of Oklahoma
Dr. Paul D. Try, Senior Vice President, Science and Technology Corporation

12:30 PM **Closing Remarks**
Mr. Samuel P. Williamson, Federal Coordinator for Meteorological Services and Supporting Research

1:00 PM Adjourn

Panel Talking Points/Issues

Panel 1: Airborne Volcanic Ash: Perspectives, Challenges, and Opportunities

Within the context of volcanic ash observations, modeling, and decision support, the panel will present/discuss:

- Progress on key actions/recommendations from the first Conference.
- Current state of volcanic ash operational support system and community (providers and users).
- Current state of supporting research.
- Deficiencies to be addressed in near-, mid- and far-terms (science, technology, education, training, and outreach). Identify the most critical areas for improvement.
- Interdisciplinary approaches to support decision making and risk assessment.
- Resource coordination and leveraging across the spectrum of operations and research, and transition into applications.
- Opportunities for the future, including efficient leveraging of the national and international application of new technologies and research science.

Panel 2: Education, Training, and Outreach

Within the context of education, training and outreach, the panel will address the following topics:

- Coverage of volcanic ash and aviation safety in the undergraduate earth sciences curriculum and in academic courses for graduate/professional education. Model curricula and areas for improvement.
- Examples of current education opportunities in the international community that can be used as models for education.
- Methods/training available to the community to train pilots and meteorologists to avoid volcanic ash hazards.
  -- Ways to make education, outreach, and training more effective in eliciting rapid and appropriate response to imminent volcanic ash hazards.
  -- Training required for aviation flight and safety personnel directly involved with volcanic ash avoidance (pilots, dispatchers, traffic managers, air traffic controllers).
  -- Training required for meteorologists and flight services personnel with responsibility for conveying information on volcanic ash hazards to aviation flight/safety personnel.
  -- Current best practice examples of training for aviation personnel and hazard/warning personnel.
- Current or future plans and/or initiatives to train decision makers and stakeholders. (Including understanding and use of risk assessment and risk management techniques.)
- Information/dissemination technology changes to improve education, training and outreach processes.
- Information tools and decision aids to support decisions on ash avoidance actions.
- Current and potential role of the media in reaching stakeholders.
  -- Example: taking information from VAACs and formatting or relaying it in a form that

facilitates understanding and decision making.

-- Improving the general awareness (by the public, government leaders, industry management, etc.) of the volcanic ash hazard, the technology and systems in place or in development to reduce the risks, and the problems still to be solved.

Breakout Session Talking Points/Issues

Breakout Session 1: Improving Volcanic Ash Cloud Detection

- Enhanced satellite imagery for ash detection
- Satellite-based assessments of ash density and height
- Quantity, utility, and dissemination of ash observations in pilot reports and surface observations
- Content and dissemination of ash observations by volcanologists
- Usefulness of Volcanic Activity Reports (ICAO format)
- Ash detection using remote sensing by radar or reconnaissance flights

Breakout Session 2: Improving Modeling Capabilities

- Defining the ash cloud edge
- Identifying source-term improvements
- Assimilating ash cloud observations in the forecast dispersion model
- Designing a database for model verification: volcanic ash source term / satellite imagery / meteorology
- Educating the user of model output – interpreting and decision making

Breakout Session 3: Understanding the Socioeconomic Consequences

- Identifying costs to en route operations associated with ash hazard
- Identifying the impact on aerodrome operations
- Identifying the cost benefits associated with improvements in detection, reporting and forecasting (e.g., how do we measure the benefits? What data is used to monitor the long-term benefits?)
- Identifying operational impact of unexpected volcanic eruptions
- Identifying the collection, documentation, and reporting on socioeconomic consequences on a periodic basis
- Identifying criteria for research needs and factors relevant to assigning priorities for such research

Breakout Session 4: Improving Volcanic Eruption Reporting

- Identifying promising directions in volcano monitoring in support of aviation users
- Characterizing the type of volcano-activity report, including use of color codes, that is optimal for aviation users
- Identifying where weak points in volcano reporting can be strengthened
- Presenting examples of effective eruption detection and reporting in support of aviation users

- Identifying research needs and priorities in volcanic eruption reporting

Breakout Session 5: Technology Transfer from Research into Operations

- Defining procedures for Federal agencies to implement new technology on existing or planned systems, e.g., what technology transfer processes current exist, how they have worked/not worked, and what are the proposed improvements?
- Identifying new initiatives, or infusion plans to improve aviation safety in the next 10-15 years (e.g., technology transfer roadmap)
- Understanding the private-sector perspective on impact of implementing new technologies and procedures
- Understanding how researchers can identify the needs of operational agencies and users
- Understanding how ICAO introduces new technology into standards and practices to support international air navigation

Breakout Session 6: Improving VAAC Operational Capabilities

- Reducing inconsistencies among VAACs and MWOs in interpretation of the significance of ash events
- Identifying airlines needs that VAACs/MWOs can meet and those that they cannot (yet) meet
- Identifying factors affecting message
- Achieving necessary staffing levels and training
- Reducing communications problems and future dissemination improvements
- Leveraging opportunities for improved cooperation and sharing of information through the global environment
- Establishing close VAAC/observatory and MWO/observatory ties before they are needed.
- Identifying ICAO's role in providing education, information, and training to all International Airways Volcanic Watch (IAVW) components
- Overcoming language barriers
- Maintenance of current contact information; problems with international phone calls
- Addressing the specific problems of MWOs that only rarely have ash in their airspace
- Addressing the specific needs of VAACs that have many MWOs in their airspace

Breakout Session 7: Meeting Aviation Needs

- Identifying flight crews, dispatchers, and controllers service needs (including new requirements on dissemination and display of volcanic ash)
- Identifying metrics for graphical product
- Evaluating current and proposed products and their usefulness (e.g., impact on decision support)
- Identifying the airspace that needs to be closed; discuss criteria to resume operations through affected airspace
- Identifying metrics of ashfall at an aerodrome (e.g., how to measure ashfall at an airport)
- Identifying timeliness of reports and communication of information (including identification of data forecast, e.g., how information is being displayed)
- Identifying processes to define support for decision making (risk factors, probabilities)

Breakout Sessions 8-11

The regional breakout sessions are intended to provide a forum to discuss issues pertinent to a particular ICAO region that cut across topical and organizational lines. By bringing together diverse specialists who work in a given region, specific operational improvements can be identified for issues ranging from, e.g., eruption reporting by a volcano observatory to outputs of a particular dispersion model to VAAC protocols.

Smithsonian Information:

All the participants of the Conference are invited to attend a reception at the Smithsonian Institution's National Museum of Natural History on the evening (6:30 to 8:00 pm) of Wednesday 23 June. Chartered buses will be provided to transport people between the hotel and the Museum. The reception will be held in the Museum's Rotunda, and light food and beverages will be provided. The Geology, Gems, and Minerals Exhibit will also be open to the reception attendees.

VAAC Tour Information:

All the participants of the Conference are invited to attend a tour of the Washington Volcanic Ash Advisory Center on the evening of Tuesday 22 June. The tour will also include a view of the 24-hour operations of two of the NOAA National Weather Service's National Centers for Environmental Prediction: the Hydrometeorological Prediction Center and the Ocean Prediction Center. Chartered busses will be provided to transport people between the hotel and the Centers; the tour is limited to the first 100 persons on a first-come, first-serve basis. Please see http://www.ofcm.gov/homepage/text/spc_proj/volcanic_ash/other.html for further information.